40 CFR Part 799

[OPTS-42030A; FRL-2941-8]

Toxic Substances; Mesityl Oxide; Final Test Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is issuing a final test rule establishing testing requirements under section 4(a) of the Toxic Substances Control Act (TSCA) for manufacturers and processors of mesityl oxide (MO; GAS No. 141-97-7). Testing requirements include (1) inhalation subchronic (90-day) toxicity in at least one mammalian species, (2) mutagenicity (including tests for both gene mutations and chromosomal aberrations), and (3) oncogenicity (if certain mutagenicity test results are positive).

DATE: In accordance with 40 CFR 23.5 (50 FR 7271; February 21, 1985), this rule shall be promulgated for purposes of judicial review at 1 p.m. eastern ["daylight" or "standard" as appropriated] time on January 6, 1986. This rule shall become effective on February 3, 1986.

FOR FURTHER INFORMATION CONTACT: Edward A. Klein, Director, TSCA Assistance Office (TS-799), Office of Toxic Substances, Rm. E-543, 401 M St., SW., Washington, DC 20460. Toll Free: (800-424-9065), In Washington, DC: (554-1404), Outside the USA: (Operator—202-554-1404).

SUPPLEMENTARY INFORMATION: In the **Federal Register** of July 5, 1983 (48 FR 30699), EPA issued a proposed rule under section 4(a) of TSCA to require testing of MO for chronic effects, mutagenicity, and oncogenicity (conditional on the mutagencity test results). The Agency is now promulgating a final rule requiring testing for these health effects.

I. Introduction

This notice is part of the overall implementation of section 4 of the Toxic Substances Control Act (TSCA, Pub. L. 94-469, 90 Stat. 2003 *et seq.*, 15 U.S.C. 2601 *et seq.*), which contains authority for EPA to require development of data relevant to assessing the risks to health and the environmental posed by exposure to particular chemical substances or mixtures.

Under section 4(a)(1) of TSCA, EPA must require testing of a chemical substance to develop health or environmental data if the Agency finds that:

(A)(i) the manufacture, distribution in commerce, processing, use or disposal of a chemical substance or mixture or that any combination of such activities, may present an unreasonable risk or injury to health or the environment.

(ii) there are insufficient data and experience upon which the effects of such manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(iii) testing of such substance or mixture with respect to such effects is necessary to develop such data; or

(B) (i) a chemical substance or mixture is or will be produced in substantial quantities, and (I) it enters or may reasonably be anticipated to enter the environment in substantial quantities or (II) there is or may be significant or substantial human exposure to such substance or mixture,

(ii) there are insufficient data, and experience upon which the affects of the manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(iii) testing of such substance or mixture with respect to such effects is necessary to develop such data.

EPA uses a weight-of-evidence approach in making a section 4(a)(1)(A)(i) finding in which both exposure and toxicity information are considered to make the finding that the chemical may present an unreasonable risk. For the finding under section 4(a)(1)(B)(i), EPA considers only production, exposure, and release information to determine if there is or may be substantial release. For the second finding under both sections 4(a)(1)(A) and 4(a)(1)(B), EPA examines toxicity and fate studies to determine whether existing information is adequate to reasonably determine or predict the effects of human exposure to, or environmental release of, the chemical. In making the third finding, that testing is necessary, EPA considers whether any ongoing testing will satisfy the information needs for the chemical and whether testing that the Agency might require would be capable of developing the necessary information.

For a more complete understanding of the statutory section 4 findings, the reader is directed to the Agency's first proposed test rule package (chloromethane and chlorinated benzenes, published July 18, 1980; 45 FR 48510) and to the second package (dichloromethane, nitrobenzene, and 1,1,1-trichloroethane, published June 5, 1981; 46 FR 30300) for in-depth discussions of the general issues applicable to this section.

II. Background

A. Profile

Mesityl oxide, a colorless, oily liquid, vaporizes at room temperature producing a marked odor of peppermint detectable down to 0.017 part per million (ppm) (Ref. 1). The major use of MO is as a chemical intermediate. Four companies produce MO at six facilities as an intermediate in the manufacture of methyl isobutyl ketone (MIBK). Methyl isobutyl carbinol (MIBC) can also be produced as a coproduct in the same system (Ref. 2). Only two facilities currently isolate MO for use in end products (Ref. 3). The open literature lists a number of solvent uses for MO, e.g., for nitrocellulose, lacquers and lacquer thinners, and carburetor cleaners. According to current data, MO solvent uses have been largely phased out (Ref. 4).

The mesityl oxide level I Economic Impact Analysis, which accompanied the proposed rule, contains a thorough description of the MO production process (Ref. 5). The series of reactions leading to MO and then to MIBK and or MIBC (formed by hydrogenation of MO) may be performed in one system. Thus the MO "used" in this process is not isolated and exists only as a transient intermediate. MIBK is apparently produced only via the MO route (Ref. 4).

As noted, the primary use of MO is as an intermediate in the manufacture of MIBK. In excess of 120 million pounds per year are "produced" for this use (Ref. 4). End product uses may have at one time accounted for as much as 16 percent of production. The proposed rule estimated that 31.0 million pounds of MO was used in 1983 as a solvent and in pesticide formulations. According to current data, however, this figure has shrunk considerably due largely to a decline in the use of MO in solvent markets (Ref. 4). MO sales continue to decline. EPA estimates actual consumption of MO in 1983 at about 5 million pounds, consumed primarily in pesticide applications (Ref. 4).

B. ITC Recommendations

The Interagency Testing Committee (ITC) designated MO for priority consideration in its Fourth Report, published in the **Federal Register** of June 1, 1979 (44 FR 31866). The ITC designated MO as a priority chemical and recommended the following health effects testing: Carcinogenicity, mutagenicity, teratogenicity, chronic effects, and an epidemiology study. The ITC based its recommendations for MO on production figures in excess of 27 million pounds, estimates of up to 6,100 workers exposed, widespread consumer exposure, and the lack of adequate data to assess potential health effects. The ITC was concerned that MO may possess biological activity because of its chemical structure.

C. Proposed Rule

EPA issued a proposed test rule for MO in the **Federal Register** of July 5, 1983 (48 FR 30699). The EPA based its proposed testing requirements on the authority of section 4(a)(1)(A) of TSCA.

1. Test requirements. The proposed rule specified that MO be tested for:

a. Subchronic (90-day) inhalation toxicity test in at least one mammalian species to assess potential chronic effects.

b. Mutagenicity (gene mutations and chromosomal aberrations).

c. Oncogenicity testing was specified if MO is mutagenic in any one of the following tests: *in vitro* or *in vivo* cytogenetic tests, gene mutation in somatic cells assay, or *Drosophila melanogaster* sex-linked recessive lethal test.

2. Findings. The Agency made proposed findings that the manufacture, processing, and use of MO may present an unreasonable risk to human health due to chronic and mutagenic effects. EPA also proposed to find that if certain mutagenicity tests gave positive results, these data, supported by the potentially active biological structure of MO, would support an unreasonable risk finding of oncogenic effects. These proposed findings were based on:

a. End product use of over 31 million pounds per year; additional MO produced as a transient intermediate to MIBK.

b. 500–6,000 workers exposed in manufacturing, processing, distribution, and use.

c. Possible systemic effects (liver, kidney, possibly lung changes) in animals and possible anemia and leukopenia in workers and animals.

d. Possible mutagenic effects based on structure activity relationships to known alkylating agents.

e. Possible oncogenic effects if certain short-term mutagenicity tests proved positive.

f. The Agency also proposed to find that there are insufficient animal and human data to reasonably determine or predict the chronic and mutagenic effects of MO, and testing of MO was necessary to develop such data.

The Agency did not propose an epidemiology study because no end point had been sufficiently defined to make a finding for potential unreasonable risk to humans. Further, EPA did not propose testing for teratogenic effects because in the Agency's judgment the limited available data did not suggest a potential for these effects.

The analysis and findings on which the above determinations were based are presented in the Mesityl Oxide Support Document, which is available from the Office of Toxic Substances' TSCA Assistance Office and in the public record for this rulemaking.

D. Data Received Subsequent to Proposed Rule

Following publication of the proposed test rule, MO was added to the list of chemicals subject to the Preliminary Assessment Information Rule—Manufacturer Reporting (40 CFR Part 712) (June 25, 1984; 49 FR 25859). Pursuant to this TSCA section 8(a) rule, data on production, use, and exposure were received on this chemical. Also, in response to the proposed rule, the affected industries submitted monitoring data from production facilities and additional exposure and use information. Most of these data were declared confidential business information (CBI). However, nonconfidential summaries of this

information, where possible, have been prepared and are included in the public record of this final rule. EPA evaluated these data and additional data reported by manufacturers of MO under the TSCA section 8(d) Health and Safety Data Reporting Rule (40 CFR Part 716) (September 2, 1982; 47 FR 38780).

1. Production and use. Exxon Chemical Americas notified EPA that it was withdrawing from the manufacture and marketing of MO for commercial purposes and adjusting its operations such that MO would exist solely as a nonisolated intermediate in its MIBK process (Ref. 6). Also, Eastman Kodak Co. stated that MO is only a transient nonisolated intermediate that is never removed from the reaction vessels in which it is manufactured or equipment through which it passes during the process except in very small quantities during sampling of crude MIBK or as a trace impurity in refined MIBK (Ref. 7). Based on information from limited air monitoring during sampling, MO was not detected by a method sensitive to 0.25 ppm. MIBK was detected at 5 ppm in air (Ref. 7).

Union Carbide Corp., Exxon Chemical Americas, and Shell Chemical Co. submitted CBI section 8(a) data. In a letter received by the Agency on October 4, 1983, Union Carbide Corp. stated that the major merchant market use of MO is confined to its carrier-solvent use in pesticides (Ref. 8). It further noted that the manufacture and storage of MO as an MIBK intermediate is an essentially enclosed process with little potential for significant human risk.

2. Exposure during manufacturing and processing. The Chemical Manufacturers Association's Ketones Panel (herein referred to as The Panel), representing the principal manufacturers of ketones, supplied the exposure details summarized below.

The Panel estimates that currently fewer than 200 workers are potentially exposed to MO at six production facilities on a regular basis (Refs. 2 and 3). Most of these workers are involved in the MIBK production process. Both Exxon Chemical and Eastman Kodak produce MO as a site-limited nonisolated intermediate to MIBK (Refs. 6 and 7). The MIBK process is closed, and according to one company the only potential for exposure to MO is during the 26-minute (0.43 hour) per shift sampling operation. During sampling, employees wear personal protective devices, including rubber gloves and full face shields. Based on data from limited air monitoring sampling, MO was not detected by a method sensitive to 0.25 ppm. MIBK was detected at 5 ppm (Ref. 7).

Personal monitoring samples taken within these plants show that MO levels ranged from nondetectable to 0.72 ppm, with an average of 0.07 ppm and a median of 0.22 ppm (Ref. 3). General area sampling of fugitive emissions measured MO levels ranging from nondetectable to 2.38 ppm, with an average of 0.58 ppm and a median of 0.22 ppm.

Shell Chemical Co. produces MO as an intermediate to MIBK at two locations using a closed reactor system (Ref. 3). This manufacturer estimates that 117 workers are potentially exposed to air concentrations of MO ranging from 0.1 ppm to 1 ppm on an 8-hour time-weighted average (TWA) basis. Likewise, Union Carbide produces MO at two facilities. During 1983 and 1984, 8-hour TWA monitoring data at one plant ranged between 0.1 and 2.0 ppm during production operations; short-term samples during tank truck loading ranged between 0.3 and 0.8 ppm. At the second plant, TWA monitoring data for production operations ranged between 0.6 and 3.9 ppm, with a mean of 1.5 ppm (Ref. 3). Union Carbide estimates that fewer than 30 workers are exposed in these operations.

The Panel further states that two members market MO, principally for use in agricultural products. Thus, additional employee exposure to MO may occur during herbicide formulation. Confidential data received from the Panel derived from a limited survey of MO users state that typically, automated, enclosed process equipment is used in the formulation process. This would include unloading bulk MO into storage tanks, mixing it with other ingredients, and removing and packaging the end product. Potential exposure to MO occurs during sampling, quality control, and loading operations. The Panel estimates that fewer than 100 workers are potentially exposed to MO in these operations. Monitoring data are limited, but suggestive that exposure to MO does occur.

The Agency has reviewed the data on MO submitted by CMA, confidential data submitted by manufacturers pursuant to both TSCA and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), and other relevant data. The Agency used these data in reaching conclusions regarding the testing needs of the chemical.

In evaluating the potential exposure of workers to MO, EPA considered nonisolated intermediate exposure, isolated intermediate exposure, and exposure during distribution and processing. Exposure to MO in its function as a nonisolated intermediate to MIBK is limited. However, manfuacturing processes exist where MO may be isolated, processed, and stored prior to being converted to MIBK or for end product use. MO is also processed for use as a carrier solvent for herbicides. Exposure resulting from this processing is also subject to TSCA regulation (see Unit III.D below). EPA believes there are a number of steps during the manufacturing, processing, and distribution of MO when exposure can occur. In response to the proposed test rule, commenters submitted data showing that the amount of MO isolated for subsequent processing and/or sale has decreased significantly from the 1983 figures used by EPA in developing the NPRM. Nevertheless, the information available to EPA indicates that such isolation of MO and its attendant exposures continue to occur. Data avaialble to EPA show that over 200 workers are exposed to isolated MO in manufacturing and processing plants. An additional number of workers are exposed to isolated MO during herbicide formulation. EPA has thus concluded that current exposure to MO remains sufficient to support a "may present" finding.

If the remaining activities involving isolated MO have been halted or exposures have been significantly reduced since the submission of comments on the proposed rule, or should such activities be halted or exposures significantly reduced subsequent to the promulgation of this final rule, manufacturers and/or processers of MO could petition EPA under section 21 of TSCA to withdraw the test rule, providing evidence of the cessation of those activities. If EPA concluded the "may present" finding could no longer be made, the Agency would initiate rulemaking to withdraw the final rule. Concurrently, EPA might also initiate rulemaking pursuant to section 5(a)(2) and/or 8(a) of TSCA to require notification of the Agency prior to any significant change in manufacturing, handling, processing, or use patterns that would significantly increase exposure to MO.

III. Response to Public Comments

The Agency received comments from the Chemical Manufacturers Association (CMA) Ketones Panel (The Panel), Exxon Chemical Americas, Eastman Kodak Co., Union Carbide Corp., Vulcan Materials Co., the American Industrial Health Council (AIHC), and the Natural Resources Defense Council (NRDC). A public

meeting was also requested by CMA and held on October 24, 1983, to address concerns regarding the legal and scientific basis for the proposed test rule. A transcript of this meeting is included in the public record of this rule. The major issues identified during the comment period are discussed below.

A. Lack of Justification for the Unreasonable Risk Finding

1. Exposure potential.

The Panel commented that exposure to MO is so limited that EPA could not justify a finding that MO "may present an unreasonable risk of injury" under section 4(a)(1)(A)(i) of TSCA. It commented that all but a small fraction of total MO production is either consumed as a nonisolated intermediate or is used for applications outside the coverage of TSCA. It estimated that while 3 to 5 million pounds MO are sold commercially each year, less than 1 million pounds are distributed for us in applications to which section 4 of TSCA applies. The Panel claims that all the MO that is produced as a carrier solvent for herbicides is subject to regulation under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA, 7 U.S.C. 136; 40 CFR 158.105 and 158.110) and is thus excluded from the definition of "chemical substance" in section 3(2)(B) of TSCA.

The Panel further claimed that the exposure estimates cited by EPA in the proposed rule included agricultural workers excluded from coverage under TSCA. Likewise, employee exposure to MO during herbicide formulation was claimed to be outside the scope of EPA's authority under section 4 of TSCA.

EPA has reviewed the data submitted by The Panel and has determined that there is a basis for a section 4(a)(1)(A)(i) finding for MO. As explained in Unit I, EPA uses a weight-of-evidence approach in making a section 4(a)(1)(A)(i) finding in which both exposure and toxicity information are considered to make the finding that a chemical may present an unreasonable risk. The criteria used by the Agency for determining the basis for the exposure component of the (A)(i) finding are considerably less rigorous than those required for a section 4(B)(i) finding. (The reader is directed to the **Federal Register** document on chloromethane and chlorinated benzenes (45 FR 48521; July 18, 1980), for a fuller discussion of these criteria.) Thus, the stronger EPA's scientific basis for suspecting potential toxicity, the less exposure data are needed to support the potential risk finding. In the case of MO, EPA has reviewed data which suggest that the chemical may be toxic in a variety of ways (see Unit III.A.2. below). These data, while insufficient to allow the Agency to reasonably predict whether the levels of MO to which people are exposed (see Unit II.D.2 above) will present an unreasonable risk, do suggest a reasonable potential for MO to produce leukopenia, hypertrophy of the liver, kidney, and spleen, and based on structural activity relationships, the potential to induce mutagenic effects. While these data also suggest some potential for MO to induce carcinogenic effects, EPA believes that the mutagenicity data to be developed under this rule will provide a more appropriate basis to determine whether MO's potential for oncogenic effects is sufficient to warrant a chronic bioassay.

In addition, the Agency has determined that the MO produced and processed for use as an inert component of a pesticide clearly falls under the legal authority of TSCA. In this case, MO itself is not a pesticide as defined in section 2(u) of FIFRA (7 U.S.C. 136), but rather an inert solvent used to formulate a pesticide. Thus, EPA in developing the support for this test rule considered potential exposure to workers processing MO or formulating the pesticide product containing MO. The Agency did not consider worker or consumer exposure that may result from exposure to MO in formulated pesticide products; such exposures are subject to FIFRA authority.

2. Hazard potential.

The Panel questioned the basis for EPA's proposed finding that MO may present an unreasonable risk of chronic health effects. It asserted that (1) EPA relied on seriously flawed data to support the risk finding for chronic effects, and (2) well-conducted studies indicate that chronic effects are not a concern for MO at current exposure levels. Noting that EPA based the potential unreasonable risk finding for chronic effects and the requirement for a subchronic study on the work of Ito (Ref. 9), it contended that this work has serious deficiencies in both the experimental design and the reporting of results which serve to invalidate the study. It further contended that, in contrast to the Ito work, the study conducted by Smyth et al. (Ref. 10) was adequately controlled and reasonably identifies the toxicity of MO following subchronic exposure. Also, Union Carbide, while acknowledging that MO is chemically reactive as an alkylating agent, postulated that steric hinderance may occur because of the position of the methyl groups on the beta carbon, thus lessening MO's biological activity. (Ref. 11).

The Agency disagrees with the commenters that there is no basis for the finding that MO may present an unreasonable risk of chronic effects. As described in the proposed rule and its accompanying support document, the Agency identified two studies that supported the may present an unreasonable risk finding and the need for subchronic inhalation testing of MO (Refs. 9 and 10). EPA believes that the data presented in the Ito study (Ref. 9) raise the level of concern for potential blood, kidney, liver, and lung effects from chronic exposure to MO. The Agency recognizes that the data, as reported by Ito, have flaws and thus only weakly suggest these effects (Ref. 12). The Agency believes, however, that these data are sufficient to support the finding that MO, under the present conditions of use, "may" present an unreasonable risk of chronic effects.

Further, the Agency does not agree that well-conducted studies are currently available on MO. The Smyth *et al.* study, referenced by industry, is from a paper published in 1942 (Ref. 10). The Agency initially found, and continues to believe, that there are sufficient design and reporting deficiencies in this study to question its adequacy by today's testing standards (Ref. 12). The Smyth *et al.* study was both inadequately conducted and reported by current standards. Deficiencies include short duration of exposure (6 weeks), small sample size (10 rats; 10 guinea pigs per group), combining of sexes, pooling of results from both species, and limited pathology. Also, the description of the pathology is such that it is difficult to associate an effect with a given dose. Furthermore, while the authors indicate that blood counts were taken several times on some animals among each exposed group, no specific details were given, making it difficult to interpret the data. While no blood abnormalities were observed in this study, the limited sampling and short duration of exposure preclude dismissing the concerns for these effects. Hence, it follows that it is impossible to predict the possible health hazards likely to arise from repeated exposure to MO.

In summary, the Agency believes that the available data show that sublethal concentrations of the vapors of MO produce congestion, primarily in the kidney. The liver and lung are affected to a lesser degree. The hematopoietic system may also be a target of MO toxicity. Existing data are insufficient to reasonably determine or predict the

extent of this risk. For these reasons the Agency is requiring a subchronic study to develop data needed to assess the effects resulting from repeated exposures to MO.

EPA recognizes Union Carbide's concern that MO may be a sterically hindered ketone and that this may impact on the chemical's alkylating ability (Ref. 10). However, Union Carbide also recognizes, as does EPA, that MO is chemically reactive as an alkylating agent. Based on chemical structure alone, i.e., its structural relation to known alkylating agents, MO has a potential for posing mutagenic and oncogenic risks. Because the beta carbon is planar (in resonance with the carbonyl electrons) it may be less available to metabolic activation. The fact remains, however, that this can only be determined by utilizing biological systems. For this reason EPA made a conditional "may present" finding for oncogenicity. In this case, MO will be tested for oncogenicity only if the select "short-term" mutagenicity tests are positive indicating that biological activity occurred.

B. Automatic Triggers for Chronic Oncogenicity Bioassay

EPA received comments from CMA, AIHC, and Vulcan Chemicals on the Agency's use of mutagenicity tests to trigger 2-year oncogenicity studies. The Agency's responses to a variety of public comments on this approach, the test sequences, and the assays (and triggers for oncogenicity testing) contained within them may be found in the final Phase I test rule for the C_6 aromatic hydrocarbon fraction (50 FR 20662; May 17, 1985).

As discussed in the final Phase I test rule for the C aromatic hydrocarbon fraction (50 FR 20662, 20668–20672), the Agency believes that the use of sequences of tiered tests for mutagenicity testing and the use of automatic triggers to require chronic oncogenicity bioassays based on the results of certain mutagenicity assays are consistent with both current scientific knowledge and the regulatory approach to chemical testing established under section 4 of TSCA. Existing data show a strong correlation between positive results in certain mutagenicity tests and positive results in animal chronic oncogenicity bioassays for a large number of substances tested in both types of systems. Thus, positive results in one more of these mutagenicity assays provide a basis for concluding that the substance may be an oncogen and, in conjunction with evidence of both an active chemical structure and the potential for human exposure to the substance, that such exposure may present an unreasonable risk of oncogenicity. If all of these mutagenicity tests yield negative results, the likelihood of MO being oncogenic is small and the chronic bioassay will not be required. Conversely, if any one of these trigger tests is positive, potential oncogenicity of MO is suggested and a chronic bioassay is essential to confirm or deny that potential and provide a basis for judging what oncogenic risk exposure to MO may present (see 50 FR 20662).

Because the different mutagenicity assays used to trigger chronic oncogenicity bioassay testing generally measure differnt genotoxic effects, or smiliar effects under substantially different test conditions (e.g., *in vitro* versus *in vivo* metabolic activation), and because each test has independently shown a strong ability to identify animal carcinogens, EPA believes that it generally is appropriate for positive results in any one of these mutagenicity tests to trigger a requirement to perform chronic oncogenicity bioassays. However, EPA agrees with commenters on the proposed test rule mentioned above that the overall scientific weight-of-evidence as to a substance's potential oncogenicity should be appropriately factored into these testing decisions. Furthermore, EPA believes that the weight-of-evidence should apply differently in the case of substances where testing is required under section 4(a)(1)(A) alone (as in the case of MO) when compared with substances where the Agency finds that testing is supported under section 4(a)(1)(B) (as is the case for the C_6 aromatic hydrocarbon fraction). Where EPA has made findings of substantial production and significant or substantial exposure under section 4(a)(1)(B), there is a presumption that testing of the substance for oncogenicity is needed, and the question before the Agency is whether the weight-of-evidence from the mutagenicity testing shows an absence of oncogenic potential such that EPA can reasonably predict that the expected exposures to the substance will not present an unreasonable risk of oncogenicity. In contract, where testing is being required under section 4(a)(1)(A) alone, EPA must consider whether all of the relevant data available to the Agency after completion of the required mutagenicity tests provide evidence that the substance may present an unreasonable risk of oncogenicity.

In the case of MO, testing is being required under section 4(a)(1)(A) of TSCA alone. The finding of potential unreasonable risk of mutagenic effects is based on structure-activity relationships, and there are no test results to verify it. Thus, EPA is making a conditional "may present" finding for oncogenicity testing. This means that if any one of the four required short-term mutagenicity tests produces a positive result, EPA considers that these data, supported by the potentially biologically active structure of MO, show sufficient potential of MO to be a suspect oncogen and that chronic oncogenicity bioassay testing shall be automatically required.

C. Mutagenicity as a Regulatable End Point

While the industry commenters agreed that appropriate mutagenicity assays can be used for assessing carcinogenic potential, they objected to the use of the more elaborate tests to assess mutagenic risk as a separate end point. They objected to EPA's apparent use of rigid inflexible testing schemes in favor of a tiered approach to permit informed scientific judgement.

The general sequences of tiered tests usually employed by EPA in assessing the mutagenic (both gene mutation and cytogenetic) potential of chemical substances, which are required in this final Phase I test rule for MO, were previously described in the proposed test rule issued by the Agency for mesityl oxide (48 FR 30699; July 5, 1983), and are more completely described in the final Phase I test rule for the C_6 aromatic hydrocarbon fraction (50 FR 20662, 20668–20671; May 17, 1985). Although these general test sequences are usually employed, the Agency ultimately specifies the required mutagenicity test for each specific chemical substance on a case-by-case basis.

As described in detail in the final Phase I test rule for the C_6 aromatic hydrocarbon fraction (50 FR 20662, 20668–71), the Agency feels that there is a consensus in the scientific community on both the need for, and the manner of, identifying mammalian mutagens, and that its proposed scheme for identifying these agents is in keeping with those recommended by experts in the field of mammalian mutagenesis. Further, while it is recognized that there is, as yet, no generally accepted single methodology for estimating human risk from mutagenic agents, it is the Agency's view that appropriate methodologies do exist and are usable. Therefore, the Agency concludes that it is appropriate at this time to obtain mutagenicity data on MO with which to perform estimates of mutagenic risk for this substance for

regulatory use, should MO prove to be a mammalian germ-cell mutagen.

For reasons more fully described in the final Phase I test rule for the C_9 aromatic hydrocabon fraction (50 FR 20662, 20668–71), EPA believes that the use of automatic triggers between the assays contained in the mutagenicity testing scheme for MO is appropriate. However, in an effort to incorporate scientific judgment prior to the use of the end-point mutagenicity tests, i.e., the mouse specific-locus test and the heritable translocation test, EPA has decided to utilize automatic triggers between assays contained in lower-tier tests, and a "presumptive automatic trigger and opt-out" approach between lower-tier tests and end point tests in this final test rule for MO. Under this approach, EPA is promulgating a tiered testing scheme for mutagenicity for MO with automatic triggers to additional mutagenicity testing (including the two end point tests). Before testing is initiated in one or both of the end point mutagenicity tests, EPA will hold a public program review if the results of the previous tier tests are positive. Public participation in this program review will be either in the form of written public comments or a public meeting. Request for public comments or notification of a public meeting will be published in the **Federal Register**. If, after the review of public comments, no change in the test program is deemed necessary by EPA, testing will continue to the next test without delay. EPA will provide notification to the test sponsor(s) that the next tier test shall be conducted. If the Agency believes additional testing is no longer warranted as a result of the earlier test results public comment, scientific judgment, and other appropriate factors, EPA will issue a proposed amendment to "opt-out" by repealing the existing requirement and, after consideration of public comments on the proposed amendment, issue a final decision whether to rescind the rule requirement. This approach offers the advantage of allowing the incorporation of scientific judgment based on the weight of the evidence after the initial testing tiers have been completed and allowing change in test requirements to respond to specific chemical issues, while not significantly delaying higher-tier testing when it is deemed necessary.

EPA has decided not to use the public program review approach between the lower-tier mutagenicity tests for the MO test rule. EPA believes the use of automatic triggers between these tiers is suitable. It should be noted that this does not exclude the public from requesting modifications in the test program. Provisions are available under section 21 of TSCA for the public to petition EPA at any time to amend a rule under section 4.

D. Additional Comments by the NRDC on Mutagenicity

The NRDC believes at least two tests should be used in the second tier of mutagenicity testing to guard against a possible false-negative result in the *Drosphila* sex-linked recessive lethal (SLRL) assay.

NRDC cites as evidence of the insensitivity of the SLRL assay its failure to detect the mutagenicity of beta-naphtylamine and 3-methylcholanthrene. A review prepared for the Gene-Tox Program (Ref. 13) found that both of these agents had been inadequately tested in this assay and could not be judged to be either positive or negative. Further testing may find that these agents give positive responses in the SLRL assay. A review of the Gene-Tox data base shows that a total of 54 known carcinogens were tested in both the *Salmonella typhimurium*/mammalian microsomal assay (Ames assay) and the SLRL assay. Of these, 4 were positive in both systems; 1 was positive in the Ames assay, and negative in the SLRL assay; and 13 were positive in the Ames assay, but because of technical inadequacies could not be judged to be either positive or negative in the SLRL assay. Presumably, retesting of these latter 13 agents would increase the percentage of carcinogens that give a positive response in both assays.

It should also be pointed out that agents tested in the Ames assay will also be tested for their ability to induce chromosomal aberrations. Agents which are positive in the Ames assay but negative in the SLRL assay would still be tested for oncogenicity if either the *in vitro* or *in vivo* cytogenetics assays gave a positive response. Chemicals positive in the Ames assays but negative in the SLRL assay and the *in vitro* and *in vivo* cytogenetics assays would not require testing for oncogenicity. In these instances, the Agency feels that negative responses in insects and two mammalian systems, including a whole animal system, outweigh a single positive response in a prokaryotic system. However, the Agency will continue to evaluate comparative data on these systems and, if additional data indicate a need, will modify its test scheme, and may revise its stand on this in future test rules.

For these reasons, and also because the overall correlation with carcinogenicity in the SLRL assay is approximately 88 percent, the Agency believes that its choice of this assay as a trigger for oncogenicity testing for MO is reasonable and scientifically sound.

Further, the NRDC feels that there should be greater specificity in the test schemes, particularly the somatic cell gene mutation assay and the cytogenetics assays. Also, NRDC feels that mesityl oxide should be tested in strain TA 102 in the Ames assay.

It was an oversight that the proposed test rule for MO did not state specifically that the somatic cell gene mutation tests are to be performed in a mammalian cell line both with and without metabolic activation. However, the test guidelines referred to in the proposed test rule specify the use of mammalian cells and a metabolic activation system. The Agency is proposing those guidelines as test standards for this test rule.

The Agency's reasons for not specifying a particular cell line for either the *in vitro* mammalian cell gene mutation or *in vitro* cytogenetics assays are set forth in EPA's response to the CMA comments as detailed in the final Phase I test rule for the C_9 aromatic hydrocarbon fraction (50 FR 20662). By separate cell lines in the *in vitro* and *in vivo* cytogenetics assays, it is assumed that NRDC means different species since cell lines apply only to *in vitro* assays. The Agency has decided to not specify the species to be used or the *in vivo* cytogenetics assay because not one animal species has a sufficient data base of tested chemicals to allow for a preferential choice. Rodents, especially rats and mice, are commonly used for the *in vivo* assay while Chinese hamster ovary cells are commonly used for the *in vitro* assay. Under these conditions, the species specific effects referred to by NRDC would not be an issue.

The Agency intended that its use of the term "cytogenetics assay" referred to an assay for chromosomal aberrations such as breaks, translocations, or other changes in structure or number of the normal chromosome complement of the cells or species used in either the *in vitro* or *in vivo* assays. NRDC's use of the unscheduled DNA synthesis assay is an example of where a cytogenetic assay is inappropriate and would not be considered under this class of tests.

The Agency, at this time, is not recommending the use of strain TA 102 in the Ames assay because of the limited data base of tested chemicals available for this strain and because of its still unknown performance record during routine use in multiple laboratories. The Agency will, however, review data on this strain as it becomes

more widely available and may revise its position in the future. Companies performing or sponsoring tests on mesityl oxide may, at their discretion, include TA 102 in addition to the strains routinely used in the Ames assay.

E. Comments on Persons Subject to Testing

The Agency received comments from Eastman Kodak Co. and Union Carbide Corp. requesting clarification of who would be subject to the test rule. Kodak, specifically, requested EPA's definition of "manufacture" as that term is used under section 4(a) of TSCA. Noting that TSCA contains a generic definition of "manufacture," Kodak cited numerous examples of the Agency's providing specific guidance on the applicability of its rules to byproducts, impurities, and nonisolated intermediates. Also, Union Carbide requested an EPA decision on whether (1) manufacturers of MO as a nonisolated intermediate and (2) manufacturers of MO intended for use as a pesticide are covered by this rule. Both commenters felt that these judgements are necessary to arrive at appropriate cost sharing for testing mandated by the rule.

EPA is exempting from these testing requirements those manufacturers and processors that produce and process MO only as an impurity. Persons who manufacture or process MO as a byproduct or as a nonisolated intermediate including that MO intended for use as an "inert" solvent in pesticide products are subject to the testing requirements set forth in this rule. The total MO domestic production, including that produced as a byproduct or a nonisolated intermediate, will be used in determining reimbursement shares under the Data Reimbursement Final Rule (48 FR 41786; September 19, 1983). The Agency's rationale for these decisions follows.

EPA is exempting those manufacturers and processors that produce MO only as an impurity because the EPA findings under section 4(a) are based on exposures to MO that are a result of intentional manufacture, processing, and distribution of MO. In addition, it would be difficult for both EPA and manufacturers and processors to identify with complete assurance all chemical substances which contain MO solely as an impurity. Further, the Agency would find it difficult to apply both the exemption and reimbursement processes to those who manufacture and/or process MO solely as an impurity. The Agency's reimbursement regulations issued pursuant to section 4(c) state that those who manufacture or process chemical substances as impurities will not be subject to test requirements unless the rule specifically states otherwise (40 CFR 791.48(b)). EPA finds no basis to impose such requirement in this rule. EPA is including persons who manufacture or process MO as a byproduct or nonisolated intermediate because these activities constitute intentional manufacture and processing of MO. Finally, as discussed in Unit III.A.1 above, raw materials, intermediates, and inert ingredients produced or used in the manufacture of a pesticide are not themselves regulated under FIFRA (unless they happen to be pesticides themselves) and, therefore, are subject to TSCA. Such raw materials, intermediates, and inerts become subject to FIFRA jurisdiction when they become a component of a pesticide product (see 42 FR 64572, 64586; Dec. 23, 1977). Thus, those persons who manufacture MO for use in production of a pesticide product and those who process MO for such uses are subject to the testing requirements of this rule.

F. Comments on Protocol Submission and the Phased Test rule Process

The NRDC submitted comments concerning the need for requiring validated protocols and recommended modification of the Agency's two-phased test rule process. These comments were considered and addressed in both the final Phase I test rule for the C_9 aromatic hydrocarbon fraction (50 FR 20662, 20666–20667; May 17, 1985) and the final rule on Test Rule Development and Exemption Procedures, published in the **Federal Register** of October 10, 1984 (49 FR 39774).

However, EPA shares NRDC's desire that test rules should be completed as rapidly as possible, and the Agency has decided to modify the test rule development process for MO. Elsewhere in this issue of the **Federal Register**, EPA is proposing certain TSCA test guidelines as the required test standards for MO. The Agency is also proposing that the test data from each required study be submitted within certain time frames. By taking this action, EPA believes that testing will be initiated more expeditiously than would occur if the normal two-phase process were followed (See Unit IV.E. below).

IV. Final Test Rule for Mesityl Oxide

A. Findings

EPA is basing the final testing requirements for MO on the authority of section 4(a)(1)(A) of TSCA.

1. EPA finds that the manufacture, processing, and distribution in commerce of MO may present an unreasonable risk of injury to human health due to potential chronic, mutagenic, and oncogenic (conditional on the mutagenicity test results) effects for the reasons presented in Unit II.D. above and more fully discussed in the proposed test rule and the support document which is available in the public record.

Data submitted to EPA since publication of the proposed rule indicate that in excess of 120 million pounds of MO are produced annually as an intermediate in MIBK production; approximately 5 million pounds are sold annually for solvent use (primarily for use in pesticides). Over 200 workers are exposed to MO in its manufacture, processing, and distribution. Additional workers are exposed during the herbicide formulation process. Limited monitoring data are sufficient to show that potential occupational exposures occur in certain job categories during MO production and processing.

The finding of potential chronic toxicity is based on preliminary studies of Ito (Ref. 9), which indicate that exposure to MO may induce leukopenia and hypertrophy of the liver, kidney, and spleen. Support for this finding is provided by the earlier work of Smyth *et al.* (Ref. 10) which identified the liver, kidney, and lung as potential targets of MO's toxicity. The finding of potential mutagenic risk is based on the hypothesis that MO may behave as an alkylating agent and interact with the informational molecules of human cells (DNA, RNA, or protein). These reactions, if not repaired, may result in cellular and/or genetic damage which may be expressed as mutagenic effects. The conditional "may present" finding for oncogenicity is based on positive results in the short-term mutagenicity tests predictive for oncogenicity, supported by the potentially biologically active structure of MO.

2. EPA also finds that there are insufficient data and experience upon which the effects of the manufacture, processing, and distribution of MO on human health can reasonably be determined or predicted.

3. Testing of MO for chronic toxicity (via subchronic testing) and mutagenicity is necessary to develop such data. Testing for oncogenicity will be required if positive results are obtained in the short-term mutagenicity assays.

B. Required Testing

EPA is requiring that MO be tested for chronic toxicity (via a 90-day subchronic toxicity test), mutagenicity, and for

oncogenicity if specific mutagenicity test results are positive.

C. Test Substance

EPA is requiring that MO of at least 97 percent purity be used as the test substance because this grade is readily available and is the material to which workers would be exposed.

D. Persons Required to Test

Section 4(b)(3)(B) specifies that the activities for which the Agency makes section 4(a) findings (manufacture, processing, distribution, use and/or disposal) determine who bears the responsibility for testing. Manufacturers are required to test if the findings are based on manufacturing ("manufacture" is defined in section 3(7) of TSCA to include "import"). Processors are required to test if the findings are based on processing. Both manufacturers and processors are required to test if the exposures giving rise to the potential risk occur during use, distribution, or disposal. Because EPA has found that the manufacturing, processing, and distribution in commerce of MO give rise to exposures that may lead to an unreasonable risk, EPA is proposing that persons who manufacture or process, or who intend to manufacture or process, this chemical at any time from the effective date of this test rule to the end of the reimbursement period be subject to the rule. The end of the reimbursement period ordinarily will be 5 years after the submission of the last final report required under the test rule. As discussed in the Agency's test rule development and exemption procedures (40 CFR Part 790), EPA expects that manufacturers will conduct testing and that processors will ordinarily be exempted from testing.

Because TSCA contains provisions to avoid duplicative testing, not every person subject to this rule must individually conduct testing. Section 4(b)(3)(A) of TSCA provides that EPA may permit two or more manufacturers or processors who are subject to the rule to designate one such person or a qualified third person to conduct the tests and submit data on their behalf. Section 4(c) provides that any person required to test may apply to EPA for an exemption from that requirement.

E. Test Rule Development and Exemptions

Elsewhere in this issue of the **Federal Register**, the Agency is proposing that certain TSCA test guidelines be utilized as test standards for the development of data under this rule for mesityl oxide. As discussed in that document and in previous documents (50 FR 20652; May 17, 1985), EPA has reviewed the method for development of test rules and has decided that for most section 4 rulemakings, the Agency will utilize single-phase rulemaking. In light of this decision, EPA has reevaluated the process for developing test standards for section 4 rulemakings initiated under a two-phase process and has determined that for certain of these two-phase rules, TSCA test guidelines are available for promulgation as relevant test standards. EPA has decided that where TSCA or other appropriate test guidelines are available, the Agency in most cases will propose the relevant guidelines as the test standards for those rules.

EPA believes that, in line with its commitment to expedite the section 4 rulemaking process, it is appropriate to propose the applicable TSCA test guidelines as test standards at the same time as a Phase I final test rule is issued. With regard to the rulemaking for mesityl oxide, TSCA test guidelines are available for all the testing requirements included in this Phase I final rule. Thus, in the accompanying notice, the Agency is proposing these TSCA test guidelines as test standards.

The public, including the manufacturers and processors subject to the Phase I rule, will have an opportunity to comment on the use of the TSCA test guidelines. The Agency will review the submitted comments and will modify the TSCA guidelines, where appropriate, when the test standards are promulgated.

During the development of a test rule under the two-phase process, persons subject to the Phase I final rule are normally required to submit proposed study plans within 90 days after the effective date of the Phase I final rule. (See 40 CFR 790.30(a)(2); published in the **Federal Register** of May 17, 1985 (50 FR 20658).) However, because EPA is proposing applicable TSCA test guidelines as the test standards for the studies reguired by this Phase I final rule, persons subject to the rule, i.e., manufacturers and processors of mesityl oxide, are not required to submit proposed study plans for the required testing at this time. Persons subject to this rule, however, are still required to submit notices of intent to test or exemption applications in accordance with 40 CFR 790.25, published in the **Federal Register** of May 17, 1985 (50 FR 20657). For this rule, once the test standards are promulgated, persons who have notified EPA of their intent to test must submit study plans (which adhere to the promulgated test standards) no later than 30 days before the initiation of each required test.

Processors of MO subject to this rule, unless they are also manufacturers, will not be required to submit letters of intent, exemption applications or study plans (before testing in initiated) unless manufacturers fail to sponsor the required tests. The basis for this decision is that manufacturers are expected to pass an appropriate portion of the test costs on to processors through the pricing of products containing MO.

EPA's final regulations for the issuance of exemptions from testing requirements are in 40 CFR Part 790. In accordance with those regulations, any manufacturer or processor subject to this Phase I test rule may submit an application to EPA for an exemption from conducting any or all of the tests required under this rule. If manufacturers perform all the required testing, processors will be granted exemptions automatically without having to file applications.

Because persons subject to this rule for MO are not required to submit proposed study plans for approval, EPA will grant conditional exemptions under this rule. These exemptions will be granted following EPA's receipt of a letter of intent to conduct the required tests rather than after receipt and approval of a study plan. Notice of EPA's adoption of the final test standards and deadlines will be announced in a final Phase II test rule.

Elsewhere in this issue of the **Federal Register**, EPA is proposing deadlines for the submission of test data. Such deadlines are required under section 4(b)(1)(C) of TSCA. These proposed data submission deadlines are open for public comment and may be modified, where appropriate, when the final Phase II test rule is promulgated.

F. Reporting Requirements

EPA is requiring that all data developed under this rule be reported in accordance with the EPA Good Laboratory Practice (GLP) standards pursuant to 40 CFR Part 792, published in the **Federal Register** of November 29, 1983 (48 FR 53922).

EPA is required by TSCA section 4(b)(1)(C) to specify the time period during which persons subject to a test rule must submit test data. The Agency is proposing these deadlines elsewhere in this issue of the **Federal Register**.

TSCA section 12(b) requires that persons who export or intend to export to a foreign country any MO subject to the testing requirements of this rule (e.g., not including MO contained in a formulated pesticide product) notify EPA of such exportation or intent to

export. While the results of required testing may not be available for some time, a notice to the foreign government about the export of such substances subject to test rules serves to alert them to the Agency's concern about the substances. It gives these governments the opportunity to request such data that the Agency may currently possess plus whatever data may become available as a result of testing activities. Thus, upon the effective date of this rule, persons who export or intend to export MO must submit notices to the Agency pursuant to TSCA section 12(b)(1) and 40 CFR Part 707. For additional information, see the Federal Register of November 19, 1984 (49 FR 45561).

TSCA section 14(b) governs Agency disclosure of all test data submitted pursuant to section 4 of TSCA. Upon receipt of data required by this rule, the Agency will announce the receipt within 15 days in the Federal Register as required by section 4(d). Test data received pursuant to this rule will be made available for public inspection by any person except in those cases where the Agency determines that confidential treatment must be accorded pursuant to section 14(b) of TSCA.

The publication of the notice in the Federal Register announcing the receipt of the mutagenicity data on MO will start the deferred portion of the rule if the results of certain studies indicate that MO is mutagenic in those test systems. Persons subject to the rule are required to submit study plans for this deferred testing at least 30 days prior to the initiation of each study.

G. Enforcement Provisions

The Agency considers failure to comply with any aspect of a section 4 rule to be a violation of section 15 of TSCA. Section 15(1) of TSCA makes it unlawful for any person to fail or refuse to comply with any rule or order issued under section 4. Section 15(3) of TSCA makes it unlawful for any person to fail or refuse to: (1) Establish or maintain records or (2) submit reports, notices, or other records required by the Act or any regulations issued under TSCA.

Additionally, TSCA section 15(4) makes it unlawful for any person to fail or refuse to permit entry or inspection as required by section 11. Section 11 applies to any "establishment, facility, or other premises in which chemical substances or mixture are manufactured, processed, stored, or held before or after their distribution in commerce. . . ." The Agency considers a testing facility to be a place where the chemical is held or stored and, therefore, subject to inspection. Laboratory audits and/or inspections will be conducted periodically in accordance with the procedures outlined in TSCA section 11 by designated representatives of the EPA for the purpose of determining compliance with the final rule for MO. These inspections may be conducted for purposes which include verification that testing has begun, that schedules are being met, that reports accurately reflect the underlying raw data and interpretations and evaluations thereof, and that the studies are being conducted according the EPA GLP standards and the test standards established in the second phase of this rulemaking.

EPA's authority to inspect a testing facility also derives from section 4(b)(1) of TSCA, which directs EPA to promulgate standards for the development of test data. These standards are defined in section 3(2)(B) of TSCA to include those requirements necessary to assure that data developed under testing rules are reliable and adequate, and such other requirements as are necessary to provide such assurance. The agency maintains that laboratory inspections are necessary to provide this assurance.

Violators of TSCA are subject to criminal and civil liability. Persons who submit materially misleading or false information in connection with the requirement of any provision of this rule may be subject to penalties calculated as if they had never submitted their data. Under the penalty provisons of section 16 of TSCA, any person who violates section 15 could be subject to a civil penalty of up to $25,000 per day for each violation. Intentional violations could lead to the imposition of criminal penalties up to $25,000 for each day of violation and imprisonment for up to 1 year. Other remedies are available to EPA under sections 7 and 17 of TSCA, such as seeking an injunction to restrain violations of TSCA section 4.

Individuals as well as corporations could be subject to enforcement actions. Sections 15 and 16 of TSCA apply to "any person" who violates various provisions of TSCA. EPA may, at its discretion, proceed against individuals as well as companies themselves. In particular this includes individuals who reports false information or who cause it to be reported. In addditonal, the submission of false, fictitious, or fraudulent statements is a violation under 18 U.S.C. 1001.

V. Economic analysis of final Test Rule

To assess the economic impact of this rule, EPA has prepared an economic analysis that evaluates the potential for significant economic impacts on the industry as a result of the required testing. The economic analysis estimates the costs of conducting the required testing and evaluates the potential for significant adverse economic impacts as a result of these test costs by examining four market characteristics of mesitye oxide: (1) Price sensitivity of demand, (2) industry cost characteristics, (3) industry structure, and (4) market expectations.

Total testing costs for the final rule for MO are estimated to range from $1,872,800 to $2,824,000. This estimate includes the costs for both the required minimum series of tests as well as the conditional ones. The annualized test costs (using a cost of capital of 25 percent over a period of 15 years) range from $485,300 to $731,800. Based on an estimated production (1983) volume of 134.9 million pounds, the unit costs range from 0.36 to 0.54 cents per pound. Compared with the 1982 unit sales value for MO of 54 cents per pound, the test costs per pound are 0.67 to 1.0 percent of price.

Based on these costs and the market characteristics of MO, the economic analysis indicates that the potential for significant adverse economic impact as a result of this test rule is low. This conclusion is based on the following observations: (1) The estimated unit test costs are small; (2) the demand for MO in MIBK manufacture is inelastic as there are no substitutes and the demand for MIBK appears somewhat inelastic; and (3) the market expectations of MO are favorable.

VI. Availability of Test Facilities and Personnel

Section 4(b)(1) of TSCA requires EPA to consider "the reasonably foreseeable availability of the facilities and personnel needed to perform the testing required under the rule." Therefore, EPA conducted a study to assess the availability of test facilities and personnel to handle the additional demand for testing programs negotiated with industry in place of rulemaking. Copies of the study, "Chemical Testing Industry: Profile of Toxicological Testing," October 1981, can be obtained through the NTIS under publication number PB 82-140773. On the basis of this study, the Agency believes that there will be available test facilities and personnel to perform the testing required in this test rule.

VIII. Rulemaking Record

EPA has established a public record for this rulemaking (docket number OPTS-42030A). This record includes the basic information the Agency

considered in developing this rule, and appropriate Federal Register notices.

This record includes the following information:

A. Supporting Documentation

(1) Federal Register notices pertaining to this final rule consisting of:

(a) Notice containing the ITC designation of mesityl oxide to the Priority List (44 FR 31884; June 1, 1979).

(b) Notice of final rule requiring the submission of unpublished health and safety studies (47 FR 38780; September 2, 1982).

(c) Notice of proposed rule on mesityl oxide (48 FR 30699; July 5, 1983).

(d) Notice adding mesityl oxide to the list of chemicals subject to the preliminary assessment information rule (49 FR 25859; June 25, 1984).

(e) Notice of final rule on EPA's TSCA Good Laboratory Practice Standards (48 FR 53922; November 29, 1983).

(f) Notice of final rule on test rule development and exemption procedures (49 FR 39774; October 10, 1984).

(g) Notice of final rule concerning data reimbursement (48 FR 41786; September 19, 1983).

(h) Notice of interim final rule on test rule development and exemption procedures (50 FR 20652; May 17, 1985).

(i) Notice of final rule on the C_6 Aromatic Hydrocarbon Fraction (50 FR 20662; May 17, 1985).

(2) Support documents consisting of:

(a) Mesityl oxide technical support document for proposed rule.

(b) Economic impact analysis of NPRM for mesityl oxide.

(c) Economic impact analysis of final test rule for mesityl oxide.

(3) Communications consisting of:

(a) Written public comments.

(b) Transcription of public meeting.

(c) Summaries of phone conversations.

(d) Meeting summaries.

(4) Reports—published and unpublished contractor's reports.

B. References

(1) Krasavage, W.J., O'Donoghue, J.L., and Divincenzo G.D. "Ketones." *Patty's Industrial Hygiene and Toxicology.* Vol. II C: 4752–4754.

(2) CMA. Comments of the Ketones Panel of the Chemical Manufacturers Association on EPA's Proposed Test Rule for Mesityl Oxide. Letter from G. Cox, CMA to Public Information Office, EPA. October 4, 1983.

(3) CMA. Proposed Test Rule for Mesityl Oxide. Letter from G. Cox, Chemical Manufacturers Association to Public Information Office, EPA. May 16, 1984.

(4) USEPA. U.S. Environmental Protection Agency. Memorandum from Hollis Call to Garry Timm. Mesityl Oxide Consumption. June 11, 1985.

(5) Mathtech, Inc. Economic Impact Analysis of Proposed Test Rule for Mesityl Oxide. Contract No. 68–01–6287. June 8, 1983.

(6) Exxon Chemical Americas. Mesityl Oxide Proposed Test Rule. Comment letter submitted by M.R. Schimenti, Exxon to Public Information Office, EPA. October 4, 1983.

(7) Eastman Kodak Co., Mesityl Oxide, Proposed Test Rule. Letter from G.Y. Brokaw, Eastman Kodak to Public Information Office, EPA. October 6, 1983.

(8) Union Carbide Corp. Comments to EPA's Proposed Test Rule on Mesityl Oxide. Letter from J.B. Browning to Public Information Office, EPA. October 4, 1983.

(9) Ito, S. "Industrial Toxicological Studies on Mesityl Oxide." (translation from Japanese). *Yokahama Igaku* 20(b):253–265. 1969.

(10) Smyth, H. F., Jr., Seaton, J., Fischer, L. "Response of Guinea Pigs and Rats to Repeated Inhalation of Vapors of Mesityl Oxide." *Journal of Industrial Hygiene and Toxicology* 24:46–50. 1942.

(11) Union Carbide Corporation. Public Meeting on Mesityl Oxide. Comments by Tipton Tyler, Union Carbide at public meeting. October 24, 1983.

(12) USEPA. U.S. Environmental Protection Agency. Memorandum from Irwin P. Baumel to Gary Timm. Review of Toxicity Data on Mesityl Oxide. June 29, 1984.

(13) Lee, W.R., Abrahamson, S., Valencia, R., von Halle, E.S., Wurgler, F.E., and Zimmering, S. "The sex-linked recessive lethal test for mutagenesis in *Drosophila melanogaster.*" A report of the U.S. Environmental Protection Agency Gene-Tox Program. *Mutation Res.* 123:183–279. 1983.

Confidential Business Information (CBI), while part of the record, is not available for public review. A public version of the record, from which CBI has been deleted, is available for inspection from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays, in Rm. E–107, 401 M St., SW., Washington, DC.

VIII. Other Regulatory Requirements

A. Classification of Rule

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This test rule is not major because it does not meet any of the criteria set forth in section 1(b) of the order. First, the actual annual cost of all the testing required for MO is estimated at $405,984 to $605,530 over the market life of chemical. Second, because the cost of the required testing will be distributed over a large production volume, the rule will have only very minor effects on users' prices (no more than 0.7 percent of price) for this chemical even if all test costs were passed on. Finally, taking into account the nature of the market for this substance, the low level of costs involved, and the expected nature of the mechanisms for sharing the costs of the required testing, EPA concludes that there will be no significant adverse economic effects of any type as a result of this rule.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments received from OMB are included in the Public Record for this rulemaking.

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act (15 U.S.C. 601 *et seq.*, Pub. L. 96–354, September 19, 1980), EPA is certifying that this test rule, if promulgated, will not have a significant impact on a substantial number of small businesses for the following reasons:

1. There are no small manufacturers of this chemical.

2. Small processors are not expected to perform testing themselves, or participate in the organization of the testing effort.

3. Small processors will experience only very minor costs, if any, in securing exemption from testing requirements.

4. Small processors are unlikely to be affected by reimbursement requirements.

C. Paperwork Reduction Act

The information collection requirements contained in this rule have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control number 2070–0033.

List of Subjects in 40 CFR Part 799

Testing, Environmental protection, Hazardous substances, Chemicals, Recordkeeping and reporting requirements.

Dated: December 13, 1985.

John A. Moore,

Assistant Administrator for Pesticides and Toxic Substances.

PART 799—[AMENDED]

Part 799 is amended as follows:

1. The authority citation continues to read as follows:

Authority: 15 U.S.C. 2603, 2611, 2625.

2. New § 799.2500 is added, to read as follows:

§ 799.2500 Mesityl oxide (MO).

(a) *Identification of test substance.* (1) Mesityl oxide (CAS No. 141.79–7) shall be tested in accordance with this section.

(2) Mesityl oxide of at least 97 percent purity shall be used as the test substance.

(b) *Persons required to submit study plans, conduct tests, and submit data.* (1) All persons who manufacture or process or intend to manufacture or process MO from the effective date of this rule, February 3, 1986, to the end of the reimbursement period shall submit letters of intent to conduct testing or exemption applications, study plans, and/or shall conduct tests, and submit data as specified in this section, Subpart A of this Part, and Part 790 of this chapter.

(2) Persons subject to this section are not subject to the requirements of § 790.30 (a)(2), (5), and (6) and (b), and § 790.87(a)(1)(ii) of this chapter.

(3) Persons who notify EPA of their intent to conduct tests in compliance with the requirements of this section must submit plans for these tests no later than 30 days before the initiation of each of those tests.

(4) In addition to the requirements of § 790.87(a) (2) and (3) of this chapter, EPA will conditionally approve exemption applications for this rule if EPA has received a letter of intent to conduct the testing from which exemption is sought and EPA has adopted test standards and schedules in a final Phase II test rule.

(c) *Health effects testing*—(1) *Subchronic inhalation toxicity*—(i) *Required testing.* A 90-day subchronic inhalation toxicity test shall be conducted with MO.

(ii) [Reserved]

(2) *Mutagenic effects—chromosomal aberrations*—(i) *Required testing.* (A) An *in vitro* cytogenetic test shall be conducted with MO.

(B) An *in vitro* cytogenetic test shall be conducted for MO if the *in vitro* cytogenetic test conducted pursuant to paragraph (c)(2)(i)(A) of this section produces a negative result.

(C) A dominant lethal assay shall be conducted for MO if it produces a positive result in the *in vivro* or *in vitro* cytogenetics test conducted pursuant to paragraphs (c)(2)(i) (A) and (B) of this section.

(D) A heritable translocation assay shall be conducted for MO if it produces a positive result in the dominant lethal assay conducted pursuant to paragraph (c)(2)(i)(C) of this section.

(ii) [Reserved]

(3) *Mutagenic effects—gene mutations*—(i) *Required testing.* (A) A *Salmonella typhimurium* mammalian microsomal reverse mutation assay (Ames assay) shall be conducted with MO.

(B) A sex-linked recessive lethal test in *Drosophila melanogaster* shall be conducted for MO if it produces a positive result in the Ames assay conducted pursuant to paragraph (c)(3)(i)(A) of this section.

(C) A gene mutation in somatic cells assay shall be conducted with MO if it produces a negative result in the Ames assay conducted pursuant to paragraph (c)(3)(i)(A) of this section.

(D) A sex-linked recessive lethal test in *Drosophila melanogaster* shall be conducted for MO if it produces a positive result in the gene mutation in somatic cells assay conducted pursuant to paragraph (c)(3)(i)(C) of this section.

(E) A mouse specific-locus test shall be conducted for MO if it produces a positive result in the sex-linked recessive-lethal test in *Drosophila melanogaster* conducted pursuant to paragraph (c)(3)(i)(B) or (D) of this section.

(ii) [Reserved]

(4) *Oncogenicity*—(i) *Required testing.* An oncogenicity bioassay shall be conducted by inhalation for MO if MO gives positive results in any one or more of the following tests:

(A) *In vitro* cytogenetics test, conducted pursuant to paragraph (c)(2)(i)(A) of this section.

(B) *In vivo* cytogenetics test, conducted pursuant to paragraph (c)(2)(i)(B) of this section.

(C) Gene mutation in somatic cells assay, conducted pursuant to paragraph (c)(3)(i)(C) of this section.

(D) *Drosophila melanogaster* sex-linked recessive-lethal test, conducted pursuant to paragraph (c)(3)(i)(B) or (D) of this section.

(ii) [Reserved]

(Information collection requirements approved by the Office of Management and Budget under control number 2070-0033.)

[FR Doc. 85-30172 Filed 12-19-85; 8:45 am]

BILLING CODE 6560-50-M